

CLASS EXERCISES

Graph each quadratic function. Indicate whether the parabola opens up or down. Find the equation of the axis of symmetry and the coordinates of the vertex. Also, tell whether the vertex is a maximum or a minimum point.

1. $y = 3x^2$ 2. $y = -\frac{1}{3}x^2$ 3. $y = -x^2 + 1$ 4. $y = \frac{3}{4}x^2 - 5$

For each quadratic function, indicate whether the parabola opens up or down; and find the equation of the axis of symmetry, and the coordinates of the vertex. Do not graph the function.

5. $y = -4x^2$ 6. $y = \frac{1}{3}x^2$ 7. $y = -\frac{1}{2}x^2 + 4$ 8. $y = -\frac{2}{3}x^2 + 2$
 9. $y = 6x^2$ 10. $y = -5x^2$ 11. $y = x^2 - 3$ 12. $y = x^2 - 2$

PRACTICE EXERCISES



Use technology where appropriate.

Graph each quadratic function. Indicate whether the parabola opens up or down. Find the equation of the axis of symmetry and the coordinates of the vertex. Also, tell whether the vertex is a maximum or a minimum point.

1. $y = 4x^2$ 2. $y = -4x^2$ 3. $y = \frac{1}{4}x^2$ 4. $y = -\frac{1}{4}x^2$
 5. $y = x^2 + 2$ 6. $y = -x^2 - 1$ 7. $y = 4x^2 - 5$ 8. $y = -3x^2 + 2$

For each quadratic function, indicate whether the parabola opens up or down; and find the equation of the axis of symmetry, and the coordinates of the vertex. Do not graph the function.

9. $y = 8x^2$ 10. $y = -6x^2$ 11. $y = \frac{3}{8}x^2$ 12. $y = -\frac{1}{5}x^2$
 13. $y = -4 - 4x^2$ 14. $y = (x + 5)^2$ 15. $y = (x - 3)^2$ 16. $y = -4x^2 - 1$

17. $y = 5x^2 - \frac{1}{2}$ 18. $y = \frac{1}{2}x^2 - 5$ 19. $y = 5 + \frac{1}{2}x^2$ 20. $y = \frac{1}{2} - 5x^2$

Determine which of the three functions has the narrowest graph. Do not graph the functions.

21. $y = x^2$, $y = 3x^2$, $y = \frac{1}{3}x^2$ 22. $y = -x^2$, $y = -5x^2$, $y = -\frac{1}{5}x^2$
 23. $y = x^2$, $y = 4x^2$, $y = -6x^2$ 24. $y = -\frac{3}{4}x^2$, $y = \frac{1}{2}x^2$, $y = -\frac{3}{8}x^2$

Determine the value of a if the graph of $y = ax^2$ contains the given point.

25. $(-1, 8)$ 26. $(-2, -2)$ 27. $(3, 6)$ 28. $(\frac{1}{2}, -4)$

Determine the value of c if the graph of the given equation contains the given point.

29. $y = 2x^2 + c$; $(-\frac{3}{4}, -\frac{1}{4})$ 30. $y = -\frac{3}{4}x^2 + c$; $(3, -\frac{1}{2})$

31. Describe the difference between the graphs of $y = (x + 6)^2$ and $y = (x - 6)^2 - 7$.